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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/600,960	06/20/2003	Mark W. Kiehl	1-24583	6584
27210	7590	03/14/2006	EXAMINER	
MACMILLAN, SOBANSKI & TODD, LLC ONE MARITIME PLAZA - FOURTH FLOOR 720 WATER STREET TOLEDO, OH 43604			COMPTON, ERIC B	
			ART UNIT	PAPER NUMBER
			3726	

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,960

Applicant(s)

KIEHL, MARK W.

Examiner

Eric B. Compton

Art Unit

3726

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 13-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Remarks

1. This Office Action is in response to the Withdrawal of Allowance.
2. Prosecution on the merits of this application is reopened on claims 13-17 considered unpatentable for the reasons indicated below:

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 13-14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. 6,681,488 to Marando in view of U.S. Pat. 3,631,700 to Kosaka, or in the alternative, Kosaka in view of Marando.

Marando discloses a method of manufacturing a vehicle frame assembly comprising first and second vehicle frame assemblies, which are secured together to form the vehicle frame. See Figure 7. The reference discloses hollow tubular members are placed in forming dies, which are used to deform the members into vehicle frame members. See Figure 1-2. The reference, preferably relies on hydroforming, but does note that other metal deforming techniques can be used. See Col. 5, lines 7-14.

However, the reference does not disclose, "creating a single shock wave within a fluid to rapidly expand the hollow member into conformance with the die cavity."

Kosaka discloses a method member of electrohydraulic forming various members including hollow tubular members. See e.g., Figures 6-8. The method involves:

- a. providing a die cavity (71) having an defined by a die (65, 66);
- b. providing a hollow tubular member (80);
- c. positioning said tubular member within said die cavity;
- d. filling said tubular member with a fluid (82);
- e. discharging an electric arc (between electrodes 72 and 72') within said fluid to create a single shock wave (Col. 3, lines 39-40) within said fluid, thereby expanding said tubular member to conform to the shape of the die cavity.

Kosaka discloses the method is an improvement over conventional electrohydroforming process and allows for deformation of workpieces into desired shapes and configurations.

Regarding claim 13, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the tubular vehicle frame of Marando by using a shock wave, in light of the teachings of Kosaka, in order to more easily form the frame members into the desired shape and configuration.

In the alternative, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed hollow vehicle frame members by relying of the hollow member forming method of Kosaka, in light of the teachings of Marando, in order to form members to be used as side rails of a vehicle frame assembly. See e.g., Col. 4, lines 7-9.

Regarding claim 14, Kosaka relies on an electric arc between electrodes (72 and 72').

Regarding claim 17, Marando discloses feeding the tubular member into the die during expansion in order to minimize wall thickness reduction during forming. See Cols. 5-6, lines 62-6.

5. Claims 13-14 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. 6,681,488 to Marando in view of GB 1165902 to Hodgson, or in the alternative, Hodgson in view of Marando.

Marando discloses a method of manufacturing a vehicle frame assembly comprising first and second vehicle frame assemblies, which are secured together to form the vehicle frame. See Figure 7. The reference discloses hollow tubular members are placed in forming dies, which are used to deform the members into vehicle frame members. See Figure 1-2. The reference, preferably relies on hydroforming, but does note that other metal deforming techniques can be used. See Col. 5, lines 7-14.

However, the reference does not disclose, "creating a single shock wave within a fluid to rapidly expand the hollow member into conformance with the die cavity."

Hodgson discloses a method member of electrohydraulic forming various members including hollow tubular members. The method involves:

- a. providing a die cavity having an defined by a die (34);
- b. providing a hollow tubular member (36);
- c. positioning said tubular member within said die cavity;
- d. filling said tubular member with a fluid (82);

e. discharging an electric arc (between electrodes 68a and 68b) within said fluid to create a single shock wave within said fluid, thereby expanding said tubular member to conform to the shape of the die cavity.

Hodgson discloses the method is an improvement over conventional electrohydroforming process. See Col 2, lines 49-53.

Regarding claim 13, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the tubular vehicle frame of Marando by using a shock wave, in light of the teachings of Hodgson, in order to form more intricate and detailed shaped than merely by hydraulic methods. See *Id.*

In the alternative, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed hollow vehicle frame members by relying of the hollow member forming method of Hodgson, in light of the teachings of Marando, in order to form members to be used as side rails of a vehicle frame assembly. See *e.g.*, Col. 4, lines 7-9.

Regarding claim 14, Hodgson relies on an electric arc between electrodes (68a and 68b).

Regarding claim 17, Marando discloses feeding the tubular member into the die during expansion in order to minimize wall thickness reduction during forming. See Cols. 5-6, lines 62-6.

6. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marando and Kosaka or Hodgson in further view of U.S. Pat. 3,548,630 to Chelminski.

Marando, Kosaka, and Hodgson disclose the invention cited above. However, the references do not disclose forming the shock wave within said fluid by rapidly advancing a piston within a fluid cylinder in communication with said fluid to expand said tubular member to conform to the shape of the die cavity.

Chelminski discloses a method and apparatus for forming material by sudden impulses. "This invention is adaptable to form the material into, against, or around a die and is also adaptable for the various ways of forming materials, for example, such as bulging, stretching, compacting, extruding, drawing, sizing, expanding, or shrinking." Col. 1, lines 43-48. The reference discloses that it is an improvement over electrical discharge forming, like disclosed by Kosaka and Hodgson, which required high voltage and the wire must be replaced after each impulse. See Col. 1, lines 54-56. Instead, the reference teaches generating the impulses by rapidly advancing a piston (52) within a fluid cylinder (65) in communication with the fluid (30) to deform the workpiece (W). The apparatus can be adapted for use with present presses. Col. 2, lines 12-15.

Regarding claim 15, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have forming the shock wave of Marando and Kosaka or Hodgson within said fluid by rapidly advancing a piston within a fluid cylinder in communication with said fluid to expand said tubular member to conform to the shape of the die cavity, in light of the teachings of Chelminski, to avoid expendable parts, improve cycle time, and applying consecutive impulses to progressively shape a workpiece. Col. 2, lines 1-12. Furthermore, Chelminski provides a shock wave generating means with improvements over the electrodes of Kosaka and Hodgson.

Regarding claim 16, Chelminski provides for an electromagnet (56), which advances the piston (52).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (571) 272-4527. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Jimenez can be reached on (571) 272-4530. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Eric B. Compton
Primary Examiner
Art Unit 3726

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